REMARKS/ARGUMENTS

The applicant's attorney appreciates the Examiner's thorough search and remarks.

Claims 1-16 have been canceled.

The specification has been amended to improve the form thereof.

Claims 17-26 are new. Entry and consideration of claims 17-26 is requested.

Claims 17 and 22 are independent claims.

Each of these claims calls for solid pylons of one material. Solid as set forth in claims 17 and 22 is intended to cover a structure that does not include an internal cavity according to a dictionary definition of "solid". This limitation is shown by Figures 1 and 2 and is the inherent result of the process disclosed in the specification.

Furthermore, claims 17 and 22 both call for a pylon with a second portion which is configured to draw avalanche current away from the R_b' region of the device.

On the other hand, Blanchard (U.S. 2003/0122188) does not specifically teach or suggest configuring region 6b to draw avalanche current away from R_b' region of the device; nor can Blanchard inherently teach or suggest such a feature in that it does not specify the concentration of impurities in region 40. Thus, the charge in region 6b and region 40 cannot be compared to determine whether Blanchard discloses the subject matter of claims 17 and 23.

Furthermore, a careful reading of Blanchard would clearly lead to the conclusion that Blanchard does not teach solid pylons of one material. Referring specifically to Figs. 4(a) to 4(f), in a process according to Blanchard the pylons are formed by forming a trench, doping the bottom of the trench, extending the depth of the trench to a new bottom, doping another region at the bottom, and continuing the process until the desired depth is reached. Next, in a diffusion step, all the doped regions are linked together.

Thereafter, the trench is filled with a material other than the silicon body. See par. [0018], lines 17-24. Thus, Blanchard does not teach solid pylons of a conductivity opposite to that of the semiconductor body in which the pylon is formed, as set forth in claims 17 and 23. This is significant. By introducing a cavity in the pylon, the volume occupied by the doped regions which form the pylon is reduced compared to a solid pylon. Thus, to achieve the charge balance, the volume of the pylon must be increased, which in turn would increase its outer dimensions. As a result, a pylon such as the one shown by Blanchard, occupies more of the die compared to a solid pylon. Thus, the average cell size of a device according to Blanchard is

larger than the cell size of a device with a solid pylon, which means the current carrying density of a pylon according to Blanchard may be lower compared to a device with a solid pylon.

It is believed that claims 17-26 are, therefore, allowable over Blanchard. Such action is earnestly solicited.

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DOROTHY JENKINS
Name of Person Mailing Correspondence

Dorothy Jenkins
Signature

June 15, 2005
Date of Signature

KS:gl

Respectfully submitted,

Kourosh Salehi
Registration No.: 43,898
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700